

Table of Excessive, Greatest and Least Monthly Rainfalls.—Continued.

STATION.	SPECIAL HEAVY.			Largest Monthly.	Smallest Monthly.	
	Date.	Amt.	Duration		STATION.	Amt.
<i>Tennessee.</i>						
Chattanooga.....	8	1.10	1hr.30m.		Salt Lake City.....	0.37
<i>Texas.</i>					Washington territory.	
Denison.....				9.04	Almota.....	0.08
San Antonio.....	6	6.20		8.95	Fort Townsend.....	0.18
Waco.....				7.67	<i>Wisconsin.</i>	
Sour Lake.....	15, 16	6.10		7.58	Franklin.....	0.06
Fort Stockton.....	4, 5	6.56		6.81	<i>Wyoming.</i>	
Indianola.....	6	4.05		6.13	Cheyenne.....	0.35
Jacksboro.....				6.04	Fort Bridger.....	0.40
Huntsville.....	6, 7	3.11			Fort Washakie.....	0.48
Fort Ocho.....	4, 5	3.05	19 hrs.			
Luling.....	7	2.64				
Camp near Presidio.....	4, 5	2.68	24 hrs.			
Fort Elliott.....	27	1.17	40 m.			
<i>Vermont.</i>						
Charlotte.....				7.50		
Newport.....				7.22		
Woodstock.....				6.47		
Stratford.....				6.30		
<i>Virginia.</i>						
Lynchburg.....	26, 27	3.44		8.37		
Norfolk.....	23, 26	4.85		8.07		
Variety Mills.....	10, 11	2.72		7.18		
Cape Henry.....	25, 26	3.95				
<i>West Virginia.</i>						
Morgantown.....				7.23		
Helvetia.....				7.04		

HAIL.

Lancaster, Pennsylvania, 9th: A most destructive rain and hail storm passed over the southwest section of this county last night. Fields of tobacco ready for cutting were practically ruined, and the leaf can now only be used for fillings. It is estimated that the amount of damage caused will be considerably more than \$50,000. The corn crop also sustained some damage.

Springfield, Massachusetts, 8th: Severe storms, accompanied by hail, visited South Deerfield, Whateley and Sunderland, during the afternoon, doing an immense amount of damage to the unharvested tobacco crop. It is estimated that the damage in each of the towns will be about \$15,000.

Anna, Illinois, 29th: Hail storm of considerable severity occurred about ten miles west of this place; many of the hailstones remained on the ground until the following day. No serious damage resulted.

Hillsdale, Michigan, 17th: Hail of considerable size fell a few miles south of this place, damaging corn to some extent.

Hail was also reported by the following stations:

Mount Washington, New Hampshire, 11th.

Morgantown, West Virginia, 21st.

Oswego, New York, 19th.

Milwaukee, Wisconsin, 9th.

Alpena, Michigan, 17th.

Deadwood, Dakota, 21st.

Fort Benton, Montana, 28th.

Fort Supply, Indian territory, 27th.

Fort Elliott, Texas, 27th.

Winnemucca, Nevada, 16th.

Mission, Idaho, 11th, 24th.

Fort Bidwell, California, 30th.

Creswell, Kansas, 27th.

Wellington, Kansas, 27th.

Russell, Kansas, 27th.

Charlestown, Massachusetts, 8th.

Clinton, Missouri, 28th.

College Hill, Ohio, 8th.

Dyberry, Pennsylvania, 8th.

Meadville, Pennsylvania, 19th.

SNOW.

Snow fell at the various stations during the month as follows:

Fort Stevenson, Dakota, 30th: Scattering snow-flakes fell with rain from 10:00 a. m. to 12:00 m.

Fort Washakie, Wyoming, 18th: Heavy snow fell on the mountains near station, during the day; 29th, light snow fell from 1:00 to 7:00 a. m.

New Chicago, Montana, 28th: Light snow fell at intervals during the morning.

Deer Lodge, Montana, 28th.

Pioche, Nevada, 16th: Large snow-flakes fell, with rain, during the day; 17th, light snow from 9:40 to 10:30 a. m.

Eagle Rock, Idaho, 17th: Mountains and foot-hills covered with snow.

Emigrant Gap, California, 16th: Snow has fallen to a depth of four inches.

Reno, Nevada, 16th: The first snow of the season fell in the mountains, eight miles southwest of station, last night.

Fort Shaw, Montana, 29th.

Fort Ellis, Montana, 19th, 27th.

Fort Assinniboine, Montana, 28th.

Helena, Montana, 29th.

Pike's Peak, Colorado, 1st, 2d, 4th, 5th, 7th, 11th, 19th, 22d, 26th, 27th.

Fort Lapwai, Idaho, 29th.

Fort Buford, Dakota, 30th.

Fort Maginnis, Montana, 18th, 28th, 29th.

Fort Bridger, Wyoming, 17th, 26th.

Fort Klamath, Oregon, 30th.

Mount Washington, New Hampshire, 29th.

Tobacco Garden, Dakota, 30th.

SLEET.

Fort Shaw, Montana, 28th.

Pike's Peak, Colorado, 1st, 2d.

Santa Fé, New Mexico, 4th.

COTTON REGION REPORTS.

The following table shows the average rainfall, mean of maximum and mean of minimum temperatures, for the month of September, 1882, in each of the cotton districts as shown on chart vi., issued with the April REVIEW.

Meteorological Record for the Cotton Districts for the month of September, 1882.

DISTRICTS.	Average rainfall in inches.	Mean of the maximum.	Mean of the minimum.
New Orleans.....	2.64	86.7	67.7
Savannah.....	4.94	87.1	67.2
Charleston.....	4.73	84.8	64.9
Atlanta.....	3.16	82.3	62.3
Wilmington.....	3.49	81.7	62.8
Memphis.....	1.69	82.7	60.3
Galveston.....	3.50	86.8	64.8
Vicksburg.....	1.73	85.3	61.7
Montgomery.....	3.10	84.3	62.0
Augusta.....	4.43	83.9	61.4
Little Rock.....	2.32	83.3	59.0
Mobile.....	1.39	86.4	62.8

WINDS.

The prevailing direction of the winds during the month of September, 1882, at Signal Service stations are shown on chart number ii., by arrows flying with the wind. It will be seen from the chart that the prevailing winds along the Atlantic coast were mostly from the north and northeast; in the lower lake region they were from the northeast and east, except southwest at Toledo; in the Ohio valley, Tennessee and the Gulf states, from northwest to northeast; in the upper Mississippi and Missouri valleys, from the south and southeast; they were variable in the Rocky mountain regions; and on the Pacific coast, from north to west.

TOTAL MOVEMENTS OF THE AIR.

[In miles.]

The following are the largest total movements at the Signal Service stations: On the summit of Mount Washington, 21,771; Block Island, Rhode Island, 12,011; Sandy Hook, 11,971; Hatteras, North Carolina, 11,622; Kittyhawk, North Carolina, 11,193; Barnegat, New Jersey, 11,140; Portsmouth, North Carolina, 11,023; Cape May, New Jersey, 9,968; Cape Henry, Virginia, 9,292; Cape Mendocino, California, 9,225; Galveston, Texas, 9,153; Indianola, Texas, 9,151; Port Eads, Louisiana, 8,936; Sandusky, Ohio, 8,575; Fort Macon, North Carolina, 8,540; Moorhead, Minnesota, 8,351; Pike's Peak, Colo-

rado, 8,347. The smallest are: Silver City, New Mexico, 1,584; Lynchburg, Virginia, 1,780; Lewiston, Idaho, 1,904; Roseburg, Oregon, 1,915; Williamsport, Pennsylvania, 2,447; Augusta, Georgia, 2,467; Morgantown, West Virginia, 2,491; Montgomery, Alabama, 2,495; Little Rock, Arkansas, 2,542; Uvalde, Texas, 2,620; Portland, Oregon, 2,653; Fort Smith, Arkansas, 2,720; Fort Missoula, Montana, 2,820; Yankton, Dakota, 2,930; Washington, District of Columbia, 2,994; El Paso, Texas, 2,999.

HIGH WINDS.

Maximum velocities of fifty miles per hour, or more, have been reported during the month as follows: On the summit of Mount Washington, 65, nw., 12th; 57, nw., 13th; 85, s., 14th; 96, nw., 15th; 85, nw., 16th; 113, nw., (maximum of month) 17th; 76, nw., 18th; 74, nw., 19th; 70, nw., 20th; 83, s., 22d; 53, sw., 23d; 52, e., 28th, and 52, ne., 29th. Port Eads, Louisiana, 92, ne., 9th; Rochester, 56, n., 14th; Block Island, Rhode Island, 56, ne., 28th and 29th; Delaware Breakwater, 56, n., 20th; Cedar Keys, Florida, 50, s., 9th, and 54, s., 10th; North Platte, 52, se., 15th; Pike's Peak, Colorado, 52, s., 2d; Kittyhawk, North Carolina, 51, ne., 28th; Pensacola, 50, n., 9th; Barnegat, New Jersey, 50, 2d., 12th.

LOCAL STORMS.

Alabama: A violent wind storm occurred at Auburn on the 10th; many trees and several small buildings were blown down, and much fencing was destroyed. The gale continued with unabated force for five or six hours.

Connecticut: 14th. A tornado struck the town of Winsted, Litchfield county, causing serious injury to several persons and great damage to property. Ten houses and five barns were completely destroyed, and the largest trees were uprooted or twisted off. The tornado apparently formed over Long Lake about twelve miles west of Winsted, and followed a course from west to east. Its path was about fifty yards wide and two miles long. Twenty persons were more or less injured, and the damage to property amounted to \$20,000. At Bloomfield, Hartford county, three barns were blown down, and others were unroofed.

Florida: 9th. During the cyclone of the 9th, the Presbyterian church, at Freeport, Walton county, was blown from its blocks and twisted, and several mills and other buildings were blown down. At Quincy, Gadsden county, many out-houses, trees, and fences were prostrated, and five persons were killed. At Madison, Madison county, much damage was done to property and trees. The cotton crop was nearly ruined in some places. At Tallahassee, several buildings were unroofed and a church was badly damaged. Trees, fences, and out-houses were blown down. A tornado occurred at Archer, Alachua county, at about 9:00 p. m. of the 9th; several houses were leveled to the ground, others unroofed, and the largest forest trees were uprooted, or twisted off. The track of the tornado was about two hundred yards wide and three miles in length; its course was from southwest to northeast. The cloud had a zigzag motion and struck the ground only at intervals; it was accompanied by a noise resembling distant thunder, and its gyratory motion was from right to left. A tornado occurred at Darbyville, Baker county, at 10:50 p. m. of the 10th, causing great destruction. A section house and adjoining buildings were blown to pieces, the inmates sustaining more or less injury from flying debris; large trees were uprooted, and numbers of cattle and hogs were killed. The tornado cloud was pear-shaped in appearance; it ascended and descended at intervals and was of a luminous red and yellow light.

Georgia: 10th. A violent gale prevailed for four hours at Forsyth on the morning of the 10th. Large numbers of fruit and forest trees were uprooted, and much fencing was demolished.

Kansas: 19th. During a high wind which occurred at Yates Centre, a frame building was blown down and others were damaged. The storm was destructive for several miles northwest and northeast of station. On the 27th, a severe storm passed

over the southern part of the town of Newton, Harvey county. A church was demolished, but no other damage was reported.

North Carolina: 14th. A tornado occurred at Sugar Creek Church, about four miles from Charlotte, at about 4:00 p. m. The tornado appears to have formed at the edge of a wood, through which it passed, twisting off the limbs of the largest trees, and uprooting many others. It left a path as clearly indicated as if done by the woodman's axe, and in every instance the trees appeared to have been twisted off. The barns of a farm in the track of the tornado, were unroofed and the contents scattered; trees, chimneys, and much fencing were blown down and carried away. The tornado passed through corn and cotton-fields, which it beat down and ruined; its path was about three hundred yards wide and two miles long. The tornado was accompanied by a noise resembling distant thunder, and pursued a northeasterly course. During a heavy gale on the 28th, the schooner "Paragon" was blown ashore at Ocracoke; a building was also blown down.

New York: 14th. A heavy wind storm occurred in the Mohawk valley at about 5:00 p. m., causing much damage. At Mindenville, Montgomery county, a barn was blown down and one man was killed. At Mexico, Oswego county, many trees were blown down, several houses were unroofed, and fruit trees were stripped. At the agricultural fair, which was being held near the town, several tents were blown down, and other building were damaged. Many of the exhibitors suffered considerable loss of stock and other property, and several persons were more or less injured. A severe storm occurred in the southwestern part of Albany county on the 14th. Several houses and out-buildings were blown down and others were damaged; trees were uprooted and orchards laid waste. At Albany the storm was less severe, and only slight damage was done in the city. The storm was preceded by the appearance of a dense black cloud, which changed to deep yellow as it approached. During the gale of the 15th, much damage was done to fruit trees in the vicinity of Rochester, and fields of corn were prostrated, and seriously damaged.

North Volney, 19th: A violent storm occurred at 3:20 p. m., many trees were uprooted. The storm lasted about fifteen minutes.

Ohio: Sandusky, 19th. During the gale which occurred on the afternoon of the 19th, the s.s. "Alaska" was driven ashore and sustained slight damage.

Virginia: Lynchburg, 3d. During a storm several trees were blown down in the suburbs.

Vermont: Strafford, 14th. At 7:45 p. m. a tornado of considerable force passed in a northeasterly direction from Tunbridge to Strafford; several building were unroofed and trees uprooted. Its track was about one-quarter of a mile wide and four miles long.

VERIFICATIONS.

INDICATIONS.

The detailed comparison of the tri-daily indications for September, 1882, with the telegraphic reports for the succeeding twenty-four hours, shows the general average percentage of verifications to be 90.08 per cent. The percentages for the four elements are: Weather, 91.98; direction of the wind, 88.06; temperature, 90.99; barometer, 89.14 per cent. By geographical districts, they are: For New England, 88.9; middle Atlantic states, 90.4; south Atlantic states, 93.3; east Gulf states, 92.8; west Gulf states, 93.1; lower lake region, 88.6; upper lake region, 87.1; Tennessee and the Ohio valley, 91.7; upper Mississippi valley, 88.7; lower Missouri valley, 85.7; north Pacific coast region, 94.7; middle Pacific coast region, 98.8; south Pacific coast region, 98.8.

There were forty-four omissions to predict (twenty-nine being due to the absence of reports from the Pacific coast), out of 3,690, or 1.19 per cent. Of the 3,646 predictions that have been made, forty, or 1.10 per cent., are considered to have entirely failed; sixty, or 1.64 per cent., were one-fourth verified; three hundred and twenty-two, or 8.83 per cent., were one-half ver-